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REPORT
OF THE
IRRIGATION ENGINEER
For the Two Years Ending
January 1, 1907.

REPORT.

Santa Fe, New Mexico, January 11, 1907.

Hon. H. J. Hagerman, Governor of the Territory of New Mexico.

Sir:—I have the honor to report the following facts concerning the office of Territorial Irrigation Engineer.

Acting under instructions of the U. S. Land Commission, in the capacity of locating engineer to this commission, there were located by this office upon the ground 61,540.60 acres of land under the act of Congress of June 21, 1898, donating certain public lands to the Territory of New Mexico. This office also prepared lists in triplicate of said lands, which were submitted to said U. S. Commission.

EXPENDITURES.

The expenditures of this department from April 18, 1905, to November 30, 1906, inclusive (one year seven months and thirteen days), were as follows:

Office assistants and office supplies.....	\$600.00
Field assistants and traveling expenses.....	809.53

NOTE—In this connection I desire to state, that under a verbal opinion rendered to me personally by former Attorney General George W. Prichard, as to the amount the Territorial Engineer was entitled to expend when in the field, the sum of five hundred and thirty-two dollars (\$532.00) was expended for field assistants and traveling expenses in addition to the amount above given. In January of the year, 1906, the said Attorney General reversed his former opinion in the matter in a second opinion to the Territorial Auditor. I thereupon returned the said amount (\$532.00) to the Territorial Auditor.

Another item of expense was incurred by me owing to the failure of the Capitol Custodian Committee to provide me with an office equipment, etc., in the Capitol where there was a lack of available room. It was therefore necessary for me to pay out \$150.00, as rent for an office in addition to the item above given for office assistants and supplies. Since this expenditure was a necessity, I respectfully ask that I be reimbursed.

In accordance with Section 21, Chapter 102, Session Laws of 1905, this office has received transcripts of records duly certified by

the Probate Clerks of the following counties, relating to water rights:

Socorro, Torrance, Mora, Sierra, Taos, Sandoval, Luna, Santa Fe, McKinley, Otero, Dona Ana, and Valencia.

NOTE—The Probate Clerks of Quay and Roosevelt Counties inform me that said counties have no such records. I have therefore called the attention of Probate Clerks of the counties from which I have not received transcripts of said records and it is probable that the said transcripts will be in the possession of this department before the close of the present month.

Under the law just referred to, Section 27 states that the Irrigation Commissioner of each district shall have general supervision of the administration of irrigation in his respective division. To date I have received only one report, that of J. E. McCarty, Commissioner for Division No. 6. A copy of which is hereunto attached and marked Exhibit "A."

The present law does not require that commissioners shall report to the Territorial Irrigation Engineer and Mr. McCarty's action in so doing was voluntary.

Despite the small amount allowed this office per year namely, \$500.00 to be expended for field and traveling expenses, the work done has been in noticeable contrast, to-wit.:

In addition to the location of over 61,00 acres of land in different parts of New Mexico, the following reservoirs were examined:

The Gallinas Reservoir and the Pintada Reservoir constructed by the Rock Island Railroad; The Arroyo Seco Reservoir owned by the New Mexico Irrigated Lands Company; (under construction). The site of the proposed reservoir on the Arroyo Hondo projected by Mrs. Louise Nagel.

NOTE—This office has under examination at present, what is known as the Blue Water Reservoir, situated about fifteen miles west of the Blue Water station of the Arizona and Pacific Railroad for the purpose of determining how much territorial land in that vicinity can be irrigated. Preparations are being made also to investigate the reservoir sites on the Red River and Cabresto Creek, Taos County, as it is believed 20,000 acres of territorial lands can be irrigated by means of this project. The latter project is one of great feasibility in the estimation of this department and the water can undoubtedly be conveyed to the lands in question at a nominal cost. When so irrigated said lands should sell at \$40.00 an acre.

IRRIGATION ENTERPRISES ENCOURAGED.

This department has done all in its power to assist and induce the construction of irrigation projects by private parties.

Through the efforts of the Territorial Irrigation Engineer hundreds of acres of land have been placed under irrigation by individuals who had it not been for the assistance given by this department, would not even have considered said projects feasible.

This department is of supreme importance to this Territory, particularly at this time. Now that efforts are being put forth on all sides to induce immigrants to take up homes in the great southwest much can be accomplished by the Territorial Irrigation Engineer if his office is given due recognition by the Territory and ample provisions made for its maintenance. This department if properly supplied with funds can do much to aid in securing the development of the lands capable of being irrigated, or reclaimed by other methods. The individuals desiring to invest in irrigation projects are slow to take a step toward developing lands in New Mexico, unless the projects have been recommended favorably by the territorial officer in charge of such matters.

There is no question but that the development of the irrigation projects and the reclaiming of irrigable lands, have been seriously retarded because the office of Territorial Engineer was not created sooner and because it has been hampered by a lack of funds with which to carry on the work allotted to it.

This department should be allowed an ample amount of money for field work and traveling expenses so that the Territorial Irrigation Engineer could thoroughly examine all proposed irrigation projects, thus drawing them to the attention of investors and homeseekers in other parts of the country, thereby bringing to New Mexico a worthy and desirable class of people.

I respectfully recommend that this office be made separate and distinct from the Land Department and that its powers and means of work be enlarged to a capacity commensurate with its responsibilities.

In this respect, I call attention to the office of Irrigation Engineer in California, Colorado, Nevada, Wyoming, Utah and many other states and territories where the importance of the work of reclamation is fully appreciated. In these states, the Irrigation Engineer is paid a good salary and ample funds are yearly set aside for the use of himself and assistants in looking after the proper development of irrigation projects. The results obtained are apparent to even a casual observer of agriculture in the states

mentioned. I believe that without question, the same would obtain here were the necessary steps taken to induce the development of our wonderful resources and that within an infinitesimal time, New Mexico would be a garden spot of prosperous farms in many localities.

I further respectfully recommend that the law governing this department, as it is today, be changed in order to make it more explicit in defining the powers and duties of this department and of the water commissioners of the various divisions. I may state here that it is my intention to draft a bill containing needed changes in the present law, for presentation to the 37th Legislature.

The water commissioners should be directed to report to the department at stated periods and should carry on a supervision of irrigation matters in their respective divisions under the direction of this department. The mayordomos should then report to the commissioners and act under their directions on all matters pertaining to irrigation.

I also recommend that the moneys received for the sale of reservoir sites and the improvement of the Rio Grande should be devoted exclusively for the maintenance of this department, the construction of irrigation projects and for such expenses as might be incurred by the Commissioner of Public Lands for clerical hire in maintaining said lands. It is to be hoped that the people of the territory will appreciate the value of the department of the Territorial Irrigation Engineer and take needed steps to further its work before further delay results in the development of the irrigation resources of New Mexico.

Following, I have the honor to submit a table of matters of irrigation projects coming under my jurisdiction:

NOTICES OF APPROPRIATION OF UNUSED WATERS.

Division No. 1.

New Mexico Irrigated Lands Company, Rio Arriba County, El Rito River.

Mrs. Louise Nagel, Santa Fe County, Arroyo Hondo.

G. Hill Howard, Rio Arriba County, Arroyo Seco.

New Mexico Irrigated Lands Company, Rio Arriba County, Chama County.

Division No. 2.

The Jaritas Ditch and Reservoir Company, Colfax County, Chico Creek and Jaritas Creek.

T. E. Mitchell, County, Teséquito Creek, Carrizo Creek, Arroyo Alamo.

M. N. Mikesell, County, Rayado Creek.

United States Reclamation Service, Las Vegas project, San Miguel County, Sapello River, Gallinas River, San Gujuela Creek and Arroyo Pecos.

Charles Springer, Colfax County, Cimarron River.

A. D. Thompson, Colfax County, Una de Gato Creek.

A. D. Thompson, Colfax County, Una de Gato Creek.

El Paso and Rock Island Railroad Company, Guadalupe County, Pintada Canyon.

El Paso and Rock Island Company, Guadalupe County, Gallinas Canyon.

Division No. 3.

United States Reclamation Service, Urton Lake project, Chaves County, Pecos River.

W. C. Burnett, et al., County, Agua Negra Chiquita Creek and a Spring.

United States Reclamation Service, Carlsbad project, Eddy County, Pecos River.

United States Reclamation Service, Hondo project, Chaves County, Hondo River.

Division No. 4.

None.

Division No. 5.

Ralph C. Ely, Grant County, Mimbres River.

United States Reclamation Service, Rio Grande project, Dona Ana County, Rio Grande.

Rio Mimbres Irrigation Company, Grant County, Mimbres River.

Division No. 6.

None.

MAPS OF DITCHES AND RESERVOIRS.

Division No. 1.

New Mexico Irrigated Lands Company, 2.

Mrs. Louise Nogel, 1.

G. Hill Howard, 1.

Division No. 2.

The Jaritas Ditch and Reservoir Company, 1.

M. N. Mikesell, 1.

A. D. Thompson, 2.

El Paso and Rock Island Railroad Company, 2.

Division No. 3.

None.

Division No. 4.

None.

Division No. 5.

Rio Mimbres Irrigation Company, 1.

Division No. 6.

None.

PLANS AND SPECIFICATIONS.

Rio Mimbres Irrigation Company, Grant County, estimated cost, \$600,000.

Mrs. Louise Nagel, Santa Fe County, estimated cost, \$10,000

The Jaritas Ditch and Reservoir Company, Colfax County, estimated cost, \$15,000.

El Paso and Rock Island Railroad Company, Guadalupe County, estimated cost, \$18,000.

El Paso and Rock Island Company, Gallinas Reservoir, Guadalupe County, estimated cost, \$18,000.

By reason of the lack of funds no extended determination of the flow of streams was made, however, the data collected by the agents of the U. S. Government has been used.

With the earnest hope that the value of the existence of this department will be appreciated as being the means of developing the agricultural resources of the Territory to the highest degree, this report is

Respectfully submitted,

DAVID M. WHITE,
Irrigation Engineer.

REPORT OF J. E. M'CARTY, WATER COMMISSIONER.

Exhibit "A."

To the Hon. David White, Irrigation Engineer, Santa Fe, New Mexico.

Sir:—I beg to submit the following report of some of the ditches in San Juan County.

On account of frequent rains, the ditches have maintained a good supply of water throughout the summer. On September 14th, 15th and 16th, I made a thorough examination of the Starr Ditch which was built in 1877. It heads five miles northeast of Farmington on the Rio de las Animas. It is over six miles in length; is 12 feet on the bottom at the main headgate, and runs on a one-eighth per cent grade, one-half mile to the first individual headgate, which is six inches wide. Then the ditch reduces to 11 feet, 6 inches in width. Half a mile down the ditch is the one waste-way of the ditch.

The several individual headgates for measuring the water are open from the bottom to the top of the ditch, and the ditch reduces at each headgate in proportion to the shares taken out until the lower end of the ditch measures 2 feet on the bottom. There are no riffle boards in this ditch, and the expense of cleaning and repairing is slight as compared with other ditches. The distribution of the water, however, is not very satisfactory, the method employed being faulty, and the quantities per share being unequal.

On September 20th, 21st, 22nd, and 23d, I made an examination of the Riverside Ditch of Fruitland, on the San Juan River. This ditch was built in 1878. The main headgate is 4 1-2 miles east of Fruitland at Kirtland. It is 7 feet wide on the bottom and maintains its width to the end of the ditch. It runs on a one-eighth per cent grade. It has a riffle board from two to six inches high, according to circumstances, at each headgate, and every man, from the head to the foot of the ditch, has his pro rata of water fairly and evenly distributed, but the cost of cleaning the ditch is about four times as great as that of cleaning the Starr ditch. Now, is this excessive expense accounted for by the use of the many riffle boards, which gather all the mud and sediment which comes in contact with them? Can you advise as to how to obtain a better distribution of water in these ditches without materially adding to the cost of the cleaning?

On September 25th, 26th, and 27th, I made an examination of what is known as the Jewett Valley Ditch at Jewett on the San Juan River several miles below Fruitland. This ditch was original-

ly constructed in 1877, being originally about 4 1-2 miles long. About the year 1900 it was extended and enlarged. At the head it is about 12 feet wide on the bottom and diminishes as each water user takes out his water, until at the lower end it is only a few feet wide. The distribution is defective and causes a good deal of friction among the shareholders.

The ditch heads about three miles and a half above the first user about half way between Fruitland and Jewett.

All these ditches are at present organized under the Acequia law, electing three commissioners and a mayordomo each year, except the Fruitland Ditch.

Respectfully submitted,

(Signed)

J. E. M'CARTY.

Ten days' service rendered inspecting ditches, and expense for man and team.

To the Board of Irrigation Commissioners, Santa Fe, New Mexico.

Gentlemen:—I have visited a number of ditches upon La Plata River and one additional one upon the Animas River since my last report, and herewith submit report upon the same:

The La Plata Indian Ditch is owned by the La Plata Indian Ditch Company, a corporation. Its headgate is on the West bank of La Plata River about 495 feet from the NW corner of the NW 1-4 of Sec. 7, Township 32 N, R 13 W. It is 3 feet wide and 2 feet deep with a fall of 1-4 inch to the rod. It covers about 290 acres of land.

The McDermott Irrigation Ditch is owned by the McDermott Irrigation Ditch Company. It heads on the La Plata River 11.15 chains southeast of the NW corner of the NE 1-4, Sec. 3, Tp. 31 N R 13 W. It is 6 feet wide and 1 1-2 feet deep with a fall of 6.4 feet per mile. It covers about 585 acres of land, about 300 of which only is cultivated, the rest being pasture.

The Thomas Ditch is owned by private individuals. It heads on La Plata river on the West bank thereof, near the intersection of said river with the North line of SW 1-4, Sec. 15, Tp. 32 N, R. 13 W. The ditch is 3 feet wide and 1 foot deep with a fall of 1-4 inch to the rod. It covers about 160 acres of land.

The Farmers' Ditch is a Community Ditch heading on the Animas River above the town of Aztec. It has a total length of about 10 1-2 miles. At the head it is 7 feet wide and 3 feet deep with a fall of about 7 1-2 feet per mile for the first three-fourths of a mile. From there on, it is about 8 feet wide on the bottom, and 10 feet on the top with 30 inches of depth for the next 3 1-2 miles;

6 feet on bottom and 7 1-2 feet on top and a depth of 28 inches for the next three-fourths mile. And from there on gradually narrowing as the various interests drop out.

In all these ditches there is the same irregularity in the method of dividing the water that prevails throughout the county, and probably throughout the territory. One crying need of the ditch laws of New Mexico is a statute making and enforcing a systematic and uniform method of dividing the water in the several ditches.

In this county at the present time, owing to the superabundance of water in all the streams except the La Plata, the necessity of the close and careful division of water is not felt except where, through some fault in the construction or neglect in the cleaning of a ditch, the question arises between ditch-owners. But the time will come as the waters of these streams are distributed over larger areas that a uniform, careful and scientific method of division must be applied, not only in each ditch, but also in the apportionment of water from the streams themselves among the several ditches.

Respectfully submitted,

(Signed)

J. E. M'CARTY.